

REMARKS

A Petition for Extension of Time is being filed concurrently herewith.

Reconsideration and allowance in view of the foregoing amendments and the following remarks are respectfully requested.

Claim 2 has been canceled and claim 1 has been amended. Claims 1 and 3-15 are pending in this application.

Claims 1, 5 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tanimoto et al. in view of Henderson. Claims 1, 5 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Uehara et al. in view of Henderson. As Applicant has canceled claim 2 and included all of the limitations of canceled claim 2 into claim 1, Applicant submits that the above rejections are deemed moot.

Claims 2 and 6 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tanimoto et al. in view of Henderson, and further in view of Gambino et al. As noted above, claim 2 has been canceled and all of its limitations have been added to independent claim 1. Accordingly, Applicant will discuss claim 1 instead of canceled claim 2 for this rejection.

The claimed invention is directed to a method for fabricating a gate-electrode of a semiconductor device, including a step of forming a hard mask oxide layer on a gate

layer structure at a temperature lower than an oxidation temperature of a metal layer, wherein the hard mask oxide layer is obtained by performing an atomic layer deposition (ALD) technique at a temperature ranging from about 70 °C to about 350 °C, as recited in claim 1, as amended. It is submitted that the references cited by the Examiner, either alone or in combination, fail to disclose or teach the above step of the claimed invention.

In the office action, the Examiner is relying on Henderson and Gambino et al. for this step. According to Henderson, a protective layer 8 of silicon dioxide is formed over a gate 6 by exposure to a suitable oxidizing atmosphere at elevated temperature or by the SILOX process of hitting to 380 °C in a mixture of silane and oxygen. See column 3, lines 62-66. It is submitted that Henderson is moot about the ALD technique and the temperature is out of range of the claimed invention. In particular, Henderson's protective layer is formed at elevated temperature at a minimum of 380 °C, while the temperature range of the claimed invention is below 70 °C and 350 °C. Henderson clearly fails to disclose or teach the limitations of the claimed invention.

It is submitted that Gambino et al. does not supply the above-noted deficiencies of Henderson. Gambino et al. discloses

formation of a pad oxide layer 20 of insulating stack 18 utilizing a conventional deposition process such as CVD, plasma-assisted CVD, sputtering, evaporation, chemical solution deposition, or atomic layer deposition. However, they indicated that the most preferable way is to form the pad oxide layer 20 utilizing a conventional thermal oxidation process. Although they enumerate all of the possible ways of forming an oxide layer, it is submitted that just mentioning a method of atomic layer deposition without specifying the conditions of performing this method means nothing. In particular, Gambino et al. at least fails to disclose or suggest the low temperature range between 70 °C to about 350 °C. Further, as well known to a person having ordinary skill in the art, their preferable method of forming a pad oxide using a thermal oxidization process requires a lot higher temperature range.

Moreover, according to Gambino et al., a pad oxide layer 20 of an insulating stack 18 is formed on an SOI material 10, while the hard mask oxide layer is formed on the gate layer structure according to the claimed invention.

Obviousness is not established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion that the combination be made. In re Stencel, 4 USPQ2d 1701, 1072 (Fed. Cir. 1987). Nor is it proper

to selectively pick and choose isolated elements from the prior art references in order to reconstruct the claimed invention. In re Gordon, 221 USPQ 1125 (Fed. Cir. 1991). Under section 103, teachings of references can be combined only if there is some suggestion or incentive to do so. ACS Hosp. Systems v. Montefiore Hosp., 221 USPQ 929, 933 (Fed. Cir. 1984).

It is submitted that the Examiner has selectively picked and chosen just isolated elements from the prior art references in order to reconstruct the claimed invention, which we believe is improper. Moreover, there is no motivation for this combination.

Therefore, for the reasons stated above, Applicant respectfully submits that amended claim 1 is not made obvious over Tanimoto et al. in view of Henderson, and further in view of Gambino et al. Claim 6, which is dependent on claim 1, should also be allowable for the reasons discussed above with respect to claim 1.

Claims 3, 4 and 6 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Uehara et al. in view of Henderson, and further view of Park et al. Applicant traverses the rejection for the following reasons.

As set forth above, claim 1 is patentable in view of Tanimoto et al., Henderson and Gambino et al. After careful

review of Uehara et al. and Park et al., Applicant submits that these references do not supply the above-noted deficiencies of Tanimoto et al., Henderson and Gambino et al. Therefore, claims 3, 4 and 6, which are dependent on claim 1, are now believed allowable.

Applicant notes with appreciation that claims 8-15 are allowable.

All objections and rejections having been addressed, it is respectfully submitted that claims 1 and 3-15 are now in condition for allowance and a notice to that effect is earnestly solicited. If any issues remain to be resolved, the Examiner is cordially invited to telephone the undersigned attorney at the number listed below.

Respectfully submitted,
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